

***Abstract of the Disclosure***

An apparatus and method of compensating for thermal expansion and tolerance variations (wear, brinelling, mounting distortion) in a fuel injector is provided. The apparatus includes a *magneto-hydraulic thermal expansion compensator containing magnetically-active fluid* positioned in operative contact with the fuel injector actuation element. A electromagnetic coil is provided proximate the magneto-hydraulic compensator. Magnetic flux generated by the electromagnetic coil causes the viscosity of the magnetically-active fluid within the magneto-hydraulic compensator to increase, causing the magneto-hydraulic compensator to become substantially rigid during actuation of the fuel injector.